Preparatory Commission for the Comprehensive Nuclear Test-Ban Treaty Organization

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PROPOSED OVERALL WORK PROGRAMME FOR THE ESTABLISHMENT OF THE CTBT VERIFICATION REGIME

Working paper submitted by China

1. Guidelines

1.1 The overall design of the verification regime for the CTBT should be based on the principles and provisions contained in the Treaty and the Verification Protocol.

1.2 The plan for the establishment of the verification regime should be designed in an integrated and phased approach, taking into consideration the technical difficulties of specific projects and financial constraints.

1.3 According to the relevant provisions of the Treaty, the verification regime should be formally operational upon the entry into force of the Treaty.

We believe that it is feasible to divide the plan for the establishment of the verification regime into five phases, namely:

Phase I. Overall design;

Phase II. Installation of basic hardware and software in the IDC for communication, data receiving and processing; the first operational test of the network;

Phase III. Establishment of the IDC and the global communication system; the second operational test of the network;

Phase IV. Completion of the installation of all the IMS network stations (with the possible exception of a few);

Phase V. Completion of the IDC/IMS network operation tests.

1.4 At the same time, sufficient attention should be accorded to the training of personnel for verification-related technologies.

2. Overall design

2.1 Develop the technical specifications of IMS monitoring stations and the radionuclide analysis laboratories

- Technical specifications of seismic stations;

- Technical specifications of infrasound stations and sensors;

- Technical specifications of radionuclide stations, samplers, total-dose measurement instruments, and gamma-spectrum measurement instruments;

- Technical specifications of radionuclide analysis laboratories;

- Technical specifications of hydroacoustic stations and sensors;

- Principles for the selection of sites for IMS stations and the standards for station installation.

2.2 Develop the technical specifications of the IDC

- IDC global communication and data transmission capability;

- IDC data analysis and processing capability and technical standard for IDC products;

- Test standards for the IDC application software;

- Software capability for comprehensive analysis of IMS data;

- Develop the plan for the establishment of IDC global communication.

2.3 Develop the concept of IDC operations

- Real-time receipt, transmission, processing, analysis and storage of data from IMS stations;

- Report on IMS data compiling, storage, processing and analysis, as well as other services;

- Monitoring, evaluation and report on overall IMS and IDC operation.

2.4 Develop guidelines on the conduct of OSI

2.5 Develop plans for the installation, calibration and authentication of IMS stations and radionuclide analysis laboratories

- Develop the most cost-effective plan for the installation of new stations on the basis of surveys and studies;

- Develop plans for upgrading the existing stations;

- Develop plans for setting up radionuclide analysis laboratories;

- Develop plans for the calibration and authentication of IMS stations.

2.6 Establish the plan for the establishment of the IDC.

- Size of the IDC;

- Timetable.

2.7 Establish plans for the test run of the network

Develop aims and plans for each test run of the IMS/IDC network, identify the stations and items involved in the test run, establish technical requirements, test requirements and evaluation standards. Establish expert groups to provide technical guidance, oversee the organization and implementation of the tests and prepare summing-up reports.

2.8 Develop overall plans for training and assessment

Develop purposes, scope, timetables and subjects for the training and relevant assessment requirements. Regular training will be provided not only to PTS/IDC personnel, but also to personnel from IMS monitoring stations, radionuclide analysis laboratories and NDCs of States signatories. These personnel should be required to take exams to check on their technical capability and their understanding of the working procedures contained in the operation manuals. This will help ensure that the operation of the verification regime meets the requirements of the Treaty.

2.9 Establish budget principles

- Annual ceiling

- Budget-making and the process of budget approval, including determination of which institutions will have power to approve the budget.

3. Installation of the IMS and the IDC

3.1 Seismic monitoring network

Thirty-three primary stations participating in GSETT-3 meet IMS requirements, and 9 additional new arrays and 6 new 3-C stations need to be installed. Eighty-two auxiliary stations need to be upgraded or installed.

The primary seismic network should be established before the auxiliary network. The establishment of new stations and the upgrading of existing stations should be carried out in batches.

3.2 Infrasound monitoring network

Almost all the infrasound stations need to be built anew. The sequence of the construction work should be as follows: station equipment procurement, phased installation, and calibration and operation of all infrasound stations.

3.3 Radionuclide network and radionuclide analysis laboratories

In Phase II, bring equipment procurement to completion and decide on which 40 stations will have a noble gas monitoring capability. In Phase III and Phase IV, complete the installation and authentication of all the radionuclide analysis laboratories and all the radionuclide stations.

3.4 Hydroacoustic monitoring network

In Phase II and Phase III, complete the site survey of four hydrophone stations and five T-phase stations; the upgrading of two hydrophone stations and one T-phase station; and the installation of one hydrophone station and three T-phase stations.

In Phase IV, complete the construction, installation and calibration of all the remaining hydrophone and T-phase stations.

3.5 IDC construction

In Phase I, complete the alteration of the VIC, place the order for procurement of basic equipment for data transmission, processing and analysis. Complete the testing and evaluation of the PIDC software needed for the future IDC.

In Phase II, complete the initial installation of the IDC: the installation and calibration of basic hardware and software for data receipt, compiling, storage and processing; the establishment of communication links from the existing IMS stations and NDCs; test operation of the network.

In Phase III, complete the IDC installation: complete the establishment of the IDC global communication system, including the real-time and non-real-time transmission of data from IMS stations, NDCs and radionuclide analysis laboratories, complete the transfer and upgrading of the necessary PIDC software, so that the specifications required for the IDC concept of operation are basically met. Another network test operation will need to be carried out.

In Phase IV, acceptance test and technical examination on the IDC.

3.6 Technical preparation for OSI

Develop technical specifications for OSI equipment in Phase II.

In Phase III and Phase IV, finish the procurement of basic OSI equipment and develop a training programme for OSI inspectors and inspection assistants.

3.7 Develop operational manuals

The drafting of the operational manuals on various verification technologies should be initiated in Phase I. These drafts are to be improved and finalized in the course of and after the test operation of the network.

When drafting these manuals, the focus of work shall be on event screening criteria for various verification technologies.

4. Network test

The first network test should be conducted after the initial completion of the IDC installation during Phase II. All the IMS stations and NDCs which are already in the network should be required to participate in the test. The expert group should make a comprehensive evaluation of the test in accordance with the test plan and come up with advice on how to improve the network.

The second network test should be conducted after the completion of IDC installation during Phase III. All the IMS stations and NDCs which are already in the network at the time should be required to participate in the test. The expert group should make a comprehensive evaluation of the test and suggest improvements for the network.

During Phase IV, all the established IMS stations should be authenticated. The expert group should also make an evaluation of the overall capabilities of the IDC and develop an assessment plan and relevant assessment standards for the test operation of the IMS/IDC.

During Phase V, a network test of the IDC and the IMS lasting six months should be carried out. The expert group should conduct a comprehensive evaluation following this test.

5. Training and examination of verification personnel

From Phase II to Phase IV

Each training course for the PTS/IDC personnel could last three to six months. It is also necessary to arrange for short-term targeted training of personnel from IMS stations, NDCs and radionuclide analysis laboratories of States signatories. In this case, the training period could be one to two months. Necessary examinations should be conducted at the end of each training course. Only those personnel who have passed the examinations should be permitted to undertake verification tasks.

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